INSTALLATION MANUAL

Split Duct Air Conditioner

Thank you very much for purchasing our air conditioner,
Before using your air conditioner , please read this manual carefully and keep it for future reference.

1. PRECAUTIONS

Precautions before reading the installation manual.

- ■ Read this user manual carefully before installing the equipment.
- ■ The air conditioner must be installed by professional technicians.
- ■ When installing the indoor unit and its accessory pipes, adhere to this user's manual as far as possible.
- ■ Inspect and make sure the piping and cabling are correct before powering on the air conditioner.
- ■ This information may change with the update of this machine, and no further notice will be given for such change.

The safty precautions listed here are divided into two categories. In either case, important safty information is listed which must be read carefully.

WARNING

Failure to observe a warning may result in death.

CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained.Also, inform customers that they should store this installation manual along with the owner's manual for future reference.

WARNING

- ■ Do not throw or slam the remote controller.
- ■ Operate the remote controller within the receiving scope of the indoor unit, and direct the transmitting part of the remote controller to the receiver of the indoor unit.
- ■ The remote controller should be over 1m away from the television or sound box.
- ■ Do not place the remote controller at a moist place, near the heat sources such as stove, or expose it directly in the sunlight.
- ■ Ensure correct positive and negative poles when loading the batteries.
- ■ Decide the correct way of conveying the equipment.
- ■ Try to transport this equipment with the original package.
- ■ If the a ir conditioner needs to be installed on a metal part of the building, electric insulation must be performed, and the installation must meet the relevant technical standards of electric devices.

CAUTION

- ■ Install the unit where enough space of installation and maintenance is available.
- ■ Install the unit where the ceiling is horizontal and enough for bearing the weight of the indoor unit.
- ■ Install the unit where the air inlet and outlet are not baffled and are the least affected by external air.
- ■ Install the unit where the supply air flow can be sent to all parts in the room.
- ■ Install the unit where it is easy to lead out the connective pipe and the drain pipe.
- ■ Install the unit where no heat is emitted from a heat source directly.
- ■ Installing the equipment in any of the following places may lead to faults of the equipment (if that is inevitable, consult the supplier):
- • The site contains mineral oils such as cutting lubricant.
- • Seaside where the air contains much salt.
- • Hotpring area where corrosive gases exist, e.g., sulfide gas.
- • Factories where the supply voltage fluctuates seriously.
- • Inside a car or cabin.
- • Place like kitchen where oil permeates.
- • Place where strong electromagnetic waves exist.
- • Place where flammable ga ses or materials exist.
- • Place where acid or alkali gases evaporate.
- • Other special environments.
- ■ Install the unit where enough space of installation and maintenance is available.
- ■ Install the unit where the air inlet and air outlet are free from obstacles and strong wind.
- ■ Install the unit in a dry and well ventilated place.
- ■ Install the unit where the bearing surface is level and can bear weight of the unit, and is suitable for installing the unit horizontally without increasing noise or vibration.
- ■ Install the unit where the operation noise and the expelling of air do not affect neighbours.
- ■ Install the unit where no flammable gas is leaked.
- ■ Install the unit where it is convenient for pipe connection and electric connection.

2. ACCESSORIES (INDOOR UNIT)

NOTE

- ■ If in the wire control mode, the accessories do not include display panel assembly remote controller or mounting bracket.

Table.2-1

Accessory name	Qty.	Shape	Purpose
Owner's manual	1	——	——————
Installation manual	1	This manual	——————
Restriction assembly	2	——	Connect to system
Water connective pipe	1	——	Connect to water drainage pipe
D isplay board subassembly	1	——	Connect to control signal
Protective sleeve for refrigerant inlet and outlet pipes	4	▭	
Remove controller	1		
AAA battery	2		

3. INSTALLATING INDOOR UNIT

3.1 Installation Space

Ensure enough space required for installation and maintenance.

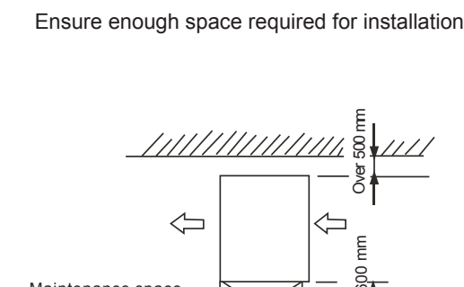


Fig.3-1

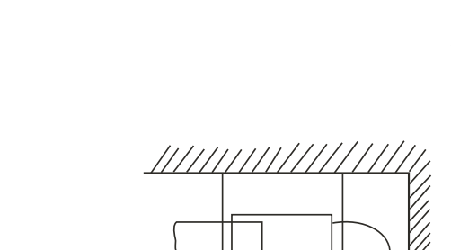


Fig.3-2

3.2 Install Φ10 Pendant Bolts Or Ground Bolts

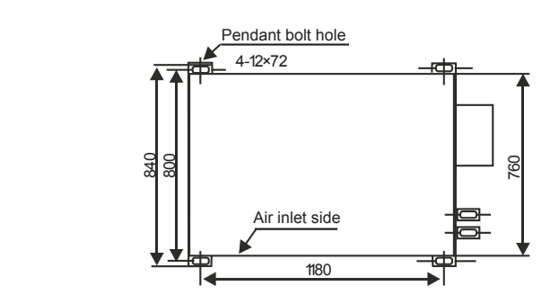


Fig.3-3

- ■ Use Φ10 or bigger screws. The screw material is high-quality carbon steel (whose surface is zinc plated or undergoes other rustproof treatment) or stainless steel.
- ■ The treatment of the ceiling varies between buildings. For detailed measures, consult with the fitting-out staff.
- ■ Fix the pendant bolts firmly and reliably in light of the specific situation.
- ■ Installation of the pendant bolt in different environments.

A. Wooden structure
Put rectanglar sticks across the beams, and set pendant bolts.

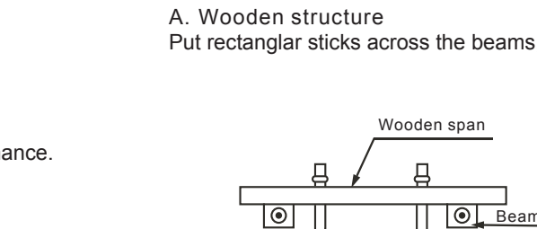


Fig.3-4

B. New concrete roughcast
Use embedded bolts, embedded pulling plugs, and embedded stick harness.

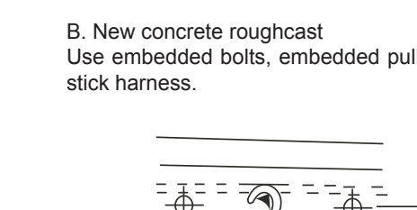


Fig.3-5

C. New concrete roughcast
Set it with embedded bushes or embedded bolts.

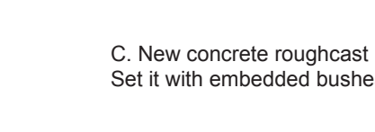


Fig.3-6

D. Steel beam and girder structure
Set and use supportive angle steel.

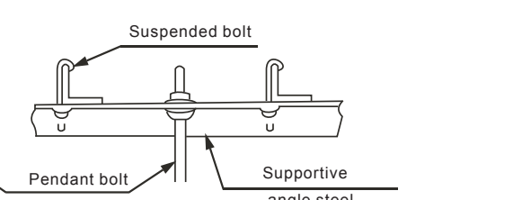


Fig.3-7

3.3 Suspending The Indoor Unit

Use a hoisting device to hoist the indoor unit, align it with the installation screw, adjust the horizontality and then tighten it.

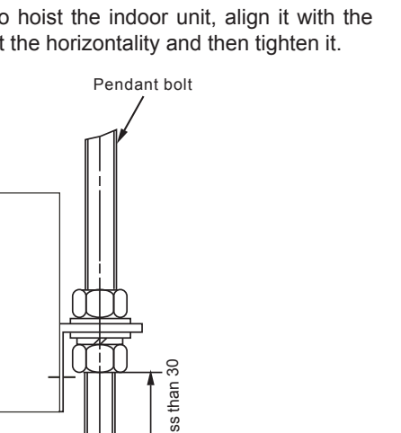


Fig.3-8

3.4 Design And Connection Of Duct

- ■ The duct design must comply with the national heating air conditioner pipeline design specifications.
- ■ The duct accessories and materials must be produced by professional manufacturers.
- ■ In order to prevent air flow shorting, do not keep the air inlet pipe near the air outlet pipe.
- ■ Install a filter at an easy-to-maintain place such as intake pipe. (Otherwise, the duct will gather on the air heat exchanger and lead to fault and water leak of the air conditioner.)
- ■ In order to suppress noise effectively, install noise suppression and sound insulation devices, especially in the noise-sensitive spaces such as meeting rooms.
- ■ For connection of the flange plane, use non-flammable canvas adapter to prevent transmission of vibration. For its size, see the indoor unit outline diagram. Use M6X20 screws (configured on site) for connection.
- ■ All pipelines must be connected closely and soundly without leak of air. The pipelines must be adiabatic and free from condensation.

Key points of duct connection

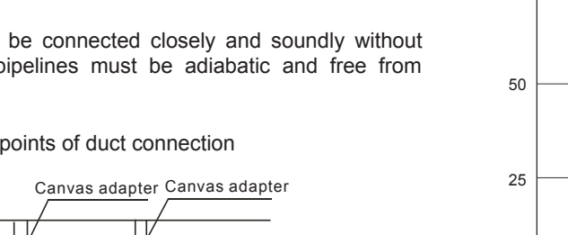
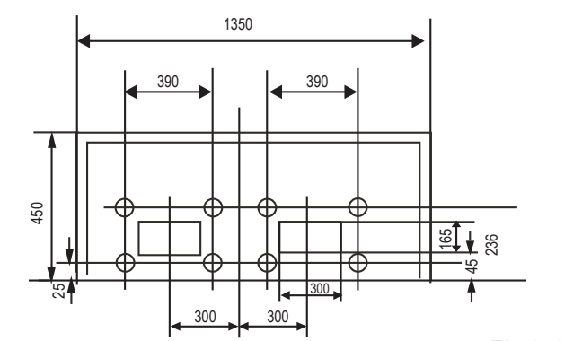
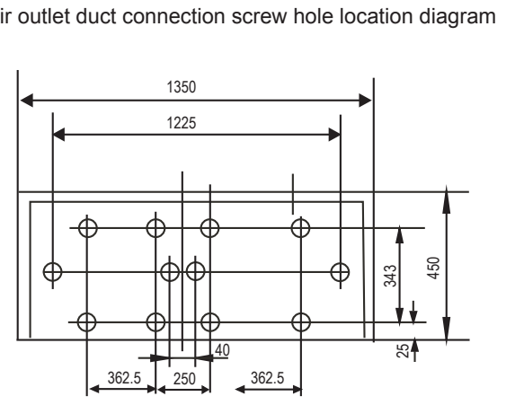


Fig.3-9



(Unit:mm)
Air outlet duct connection screw hole location diagram

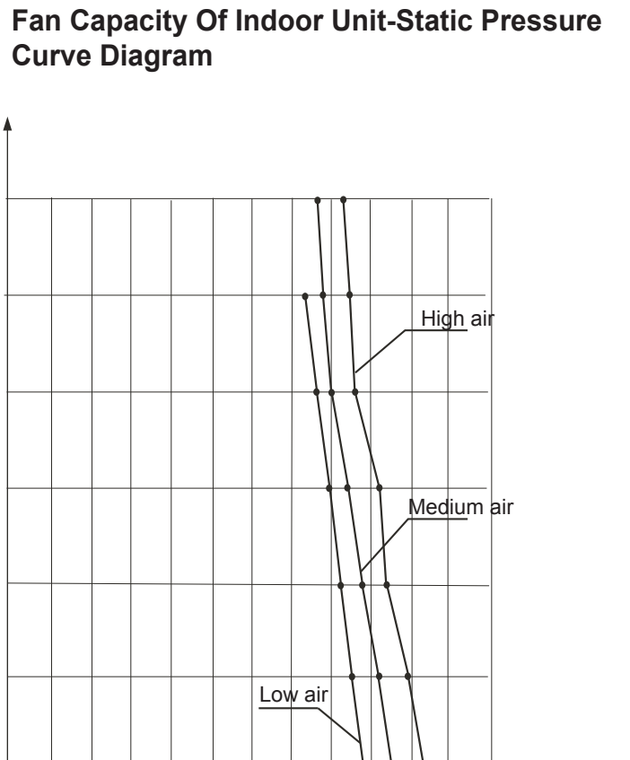
Fig.3-10



(Unit:mm)
Return air duct rivet screw hole location diagram

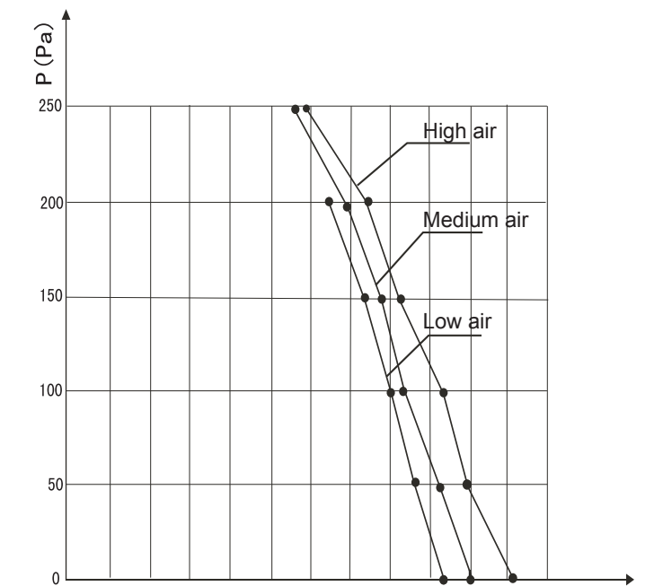
Fig.3-11

3.5 Fan Capacity Of Indoor Unit-Static Pressure Curve Diagram



Mid. static pressure

Fig.3-12



Hi. static pressure

Fig.3-13

4. INSTALLATING OUTDOOR UNIT

4.1 Important: Construction Checkpoints

- ■ **Installation**
  Check the model and name to avoid mistaken installation.
- ■ **Refrigerant pipe**
- • The refrigerant pipes must have the specified diameter.
- • Nitrogen of a certain pressure must be filled into the refrigerant pipe before welding.
- • The refrigerant pipe must undergo heat insulation treatment.
- • After the refrigerant pipe is installed completely, the indoor unit cannot be powered on before performing the airtight test and creating a vacuum.
- ■ **Refrigerant pipe**
  The refrigerant pipe must undergo the airtight test [with 2.94MPa (30kgf/cm²G) nitrogen].
- ■ **Creating a vacuum**
  Be sure to use the vacuum pump to create a vacuum of the connective pipe at both air side and liquid side concurrently.
- ■ **Refrigerant replenishment**
- • If the pipe is longer than the reference pipe, the refrigerant replenishment quantity for each outdoor unit should be calculated through the formula obtained according to the actual length of the pipe.
- • Record the refrigerant replenishment quantity, actual length of pipe and the height difference of the indoor & outdoor units onto the operation confirmation table (on the electric control box) of the outdoor unit in advance for future reference.
- ■ **Electric wiring**
- • Select the power supply capacity and wire size according to the design manual. The power wire size of the air conditioner should be greater than that of ordinary motors.
- • In order to prevent misoperation of the air conditioner, do not interleave or entwine the power cable (380V-415V 3N~ 50Hz) with the connection wires (low-voltage wires) of the indoor/outdoor unit.
- • Power on the indoor unit after performing the airtight test and making a vacuum.
- ■ **Trial run**
  Perform the trial run only after the outdoor unit has been powered on for over 12 hours.

4.2 Installation Space

- ■ When installing the unit, leave a space for maintenance shown in the following figure. Install the power supply at the side of the outdoor unit. For installation procedure, see the relevant installation manual.
- ■ Ensure enough space for installation and maintenance.(see *Fig.4-1* and *Fig.4-2)*

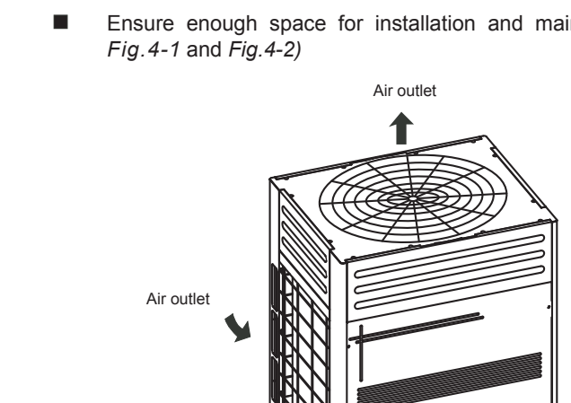
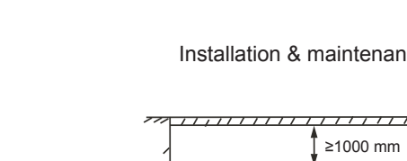


Fig.4-1

Installation & maintenance surface



Top view of the outdoor unit (multiple units installed)

Fig.4-2

NOTE

- ■ In case any obstacles exist above the outdoor unit, such obstacles must be 2000mm above the outdoor unit.
- ■ If miscellaneous articles are piled around the outdoor unit, such articles must be 400mm below the top of the outdoor unit.

4.3 Convey Outdoor Unit

- ■ Use 4 steel ropes of a f6mm or bigger size to hoist the outdoor unit and convey it into the room.
- ■ In order to prevent scratch and deformity the outdoor unit, apply a guard board to the surface of contact between the steel wire and the air conditioner.
- ■ Remove the cushion for use in the transport after finishing the transport.

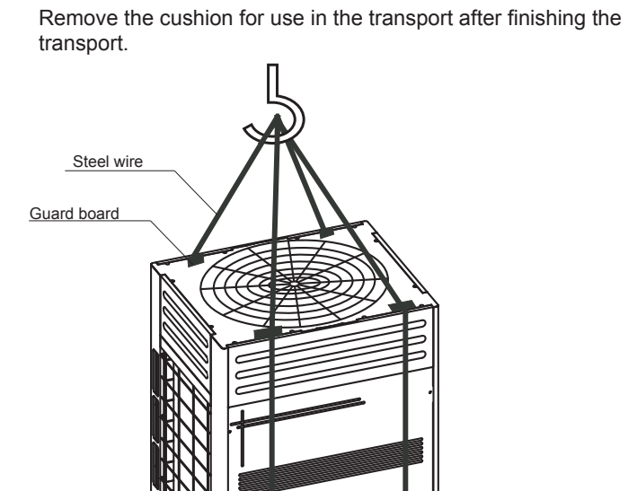


Fig.4-3

4.4 Installing The Outdoor Unit

- ■ As shown in *Fig.4-4*, leave an interval of 100mm between the outdoor units.

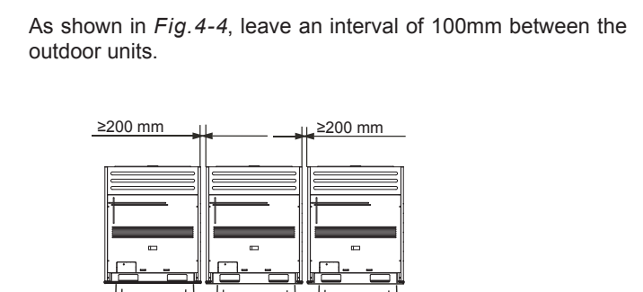


Fig.4-4

The distance of the foundation bolt is shown in *Fig.4-5.*

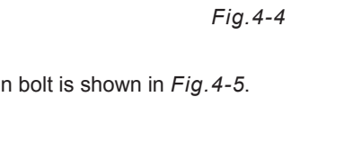


Fig.4-5

- ■ In case the refrigerant pipe is led out of the bottom, as a foundation of the beam, take it at over 500mm.

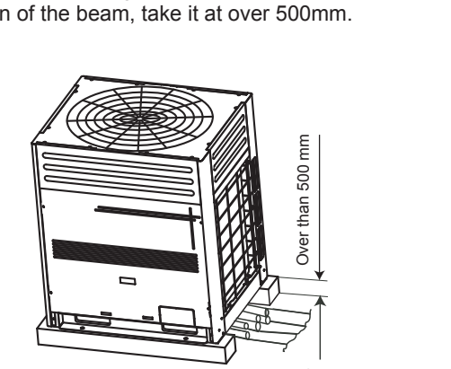


Fig.4-6

Snow protection facilities must be installed in the snowfall areas. (See the right figure) (in case the snow protection facilities are incomplete, faults may occur). In order to prevent influence caused by snow, set up raised pavilion, and install snow protection sheds at the air inlet and air outlet.

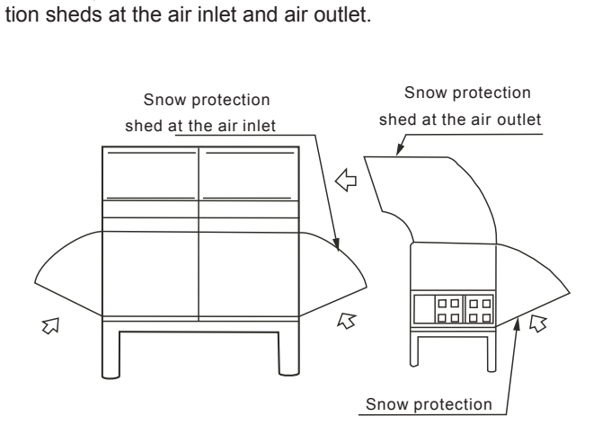

Snow protection shed at the air inlet
Snow protection shed at the air outlet
Snow protection shed at the air inlet

Fig.4-7

4.5 Refrigerant Pipe

- ■ The refrigerant pipe adapter is located inside the outdoor unit. So remove the left front board first.(four M6 screws; one M4 screw)

The pipe can be connected from the front left lower side or the bottom notch of the outdoor unit.

When the pipe is connected from the front side, the pipe can be led out through the pipe & wire panel.

In case the pipe is connected from the bottom notch, install it leftward, rightward or backward after leading it out.

When the pipe is led from the front, use a cover plate to seal the bottom notch in order to prevent intrusion of dust or trash.

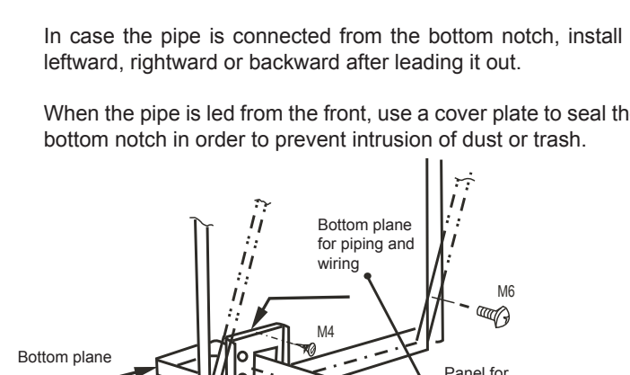


Fig.4-8

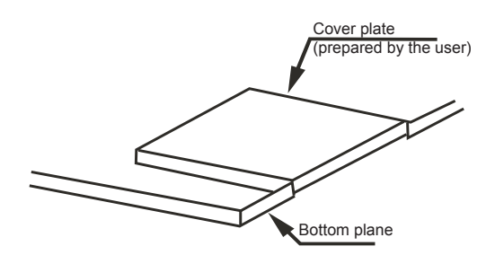


Fig.4-9

NOTE

- ■ **When welding the refrigerant pipe, in order to prevent internal oxidation of the pipe, nitrogen must be filled in. Otherwise, the oxidized chips may block refrigerating circulatory system.**

4.6 Size Of Outdoor Unit Pipes And Piping Methods

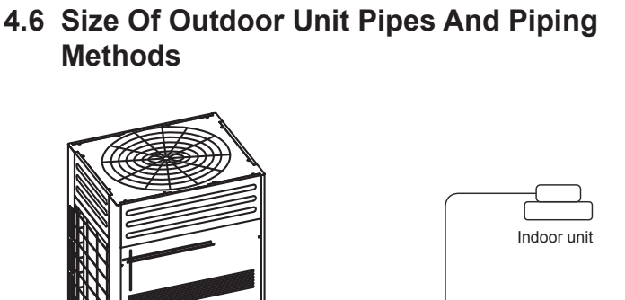


Fig.4-10

- ■ Size of outdoor unit pipes and piping methods

Table.4-1

Capacity(Btu/h)	Gas side	Liquid side
96000/76000	ϕ19.0	ϕ9.52

- ■ Allowed length of refrigerant pipe and height difference

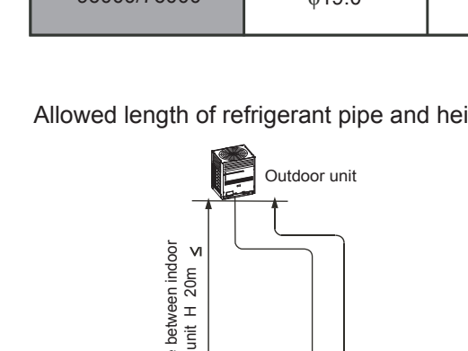

Outdoor unit
Height difference between indoor unit and outdoor unit H 20m ≤
Max. pipe length L≤30m
Indoor unit

Fig.4-11

Table.4-2

			Allowed value
Max. actual length of pipe (L)			30m
Max. height difference	Height difference between indoor unit and outdoor unit (H)	Outdoor (upper)	20m
		Outdoor (lower)	20m

4.7 Airtight Test

After the pipes between the indoor unit and the outdoor unit are connected, replenish compressed nitrogen to perform airtight test.

NOTE

- ■ The airtight test is performed by using the compressed nitrogen [2.94MPa(30kg/cm²G)].
- ■ Tighten the spool of the gas valve and liquid valve before compressing the nitrogen.
- ■ Compress the nitrogen at the air vent of the gas valve.
- ■ The gas valve and liquid valve are closed in the process of compressing the nitrogen.
- ■ Do not use oxygen, flammable gas or toxic gas in the airtight test.

4.8 Use A Vacuum Pump To Create A Vacuum

- ■ Use a vacuum pump to make a vacuum. Do not use refrigerant gas to expel air.
- ■ When making the vacuum, start from the air side.

4.9 Open All Valves

4.10 Refrigerant Replenishment Quantity

According to the diameter and length of the connective liquid-side pipe of the outdoor unit and indoor unit, calculate the refrigerant replenishment quantity. The refrigerant for replenishment is R22.

Table.4-3

Diameter of liquid-side pipe	Quantity of refrigerant replenished for 1 m pipe length
ϕ 9.52	0.065kg

4.11 Remove Trash And Moist In The Pipe

- ■ Trash and foreign matters may come into the pipe in the process of installing the refrigerant pipe. Be sure to blow them off with nitrogen before connecting the pipe to the outdoor units.
- ■ Use high-pressure nitrogen to clean the pipelines. Do not use the refrigerant of the outdoor unit for cleaning.

4.12 Schematic Diagram Of Connection Between Indoor Unit And Outdoor Unit

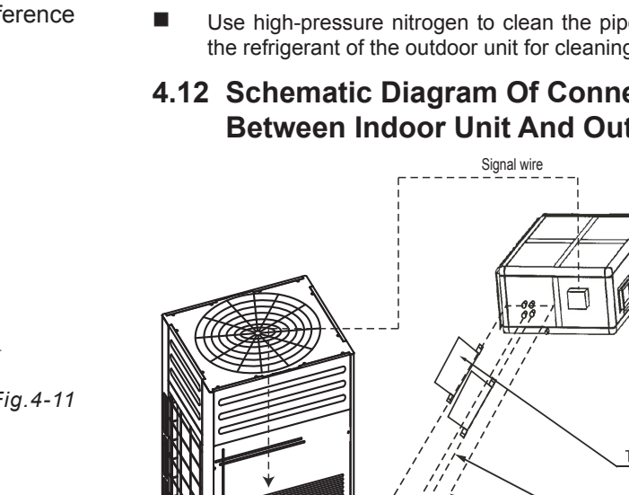

Signal wire
Throttling assembly
Gas-side connective pipe of system B
Gas-side connective pipe of system A
Liquid-side connective pipe of system B
Liquid-side connective pipe of system A

Fig.4-12

4.13 Refrigerant Leak Precautions

This air conditioner uses refrigerant R22. The R22 is safe refrigerant which is harmless and non-flammable. The room for placing the air conditioner should have a proper space. Even if refrigerant leakage occurs, the density threshold will not be crossed. Additional measures may also be taken.

- ■ Density threshold: Density of the Freon gas that does not harm the human body. Density threshold of R22: 0.3 [kg/m³]
- • Calculate the total quantity of refrigerant to be replenished (A [kg]). Total refrigerant quantity for 10HP = refrigerant replenishment quantity upon shipment (11[kg]) + additional refrigerant replenishment corresponding to the pipe length
- • Calculate out the indoor volume (B[m³]) (according to the minimum volume)
- • Calculate out the refrigerant density:

$$\frac{A[kg]}{B[m^3]} \le \text{Density threshold: } 0.3\ [kg/m^3]$$

- ■ Measures against crossing of the refrigerant density threshold
- • In order to keep the refrigerant density below the threshold value, please install a mechanic ventilation device. (perform ventilation often)
- • In case frequent ventilation is impossible, please install the leakage detection alarm device linked with the mechanical ventilation device.

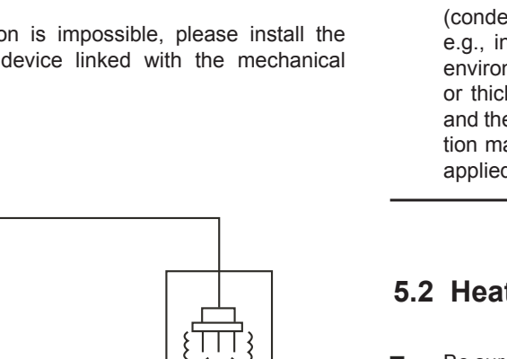

Outdoor unit
Room in which refrigerant is leaked
(All refrigerant is leaked)

Fig.4-13

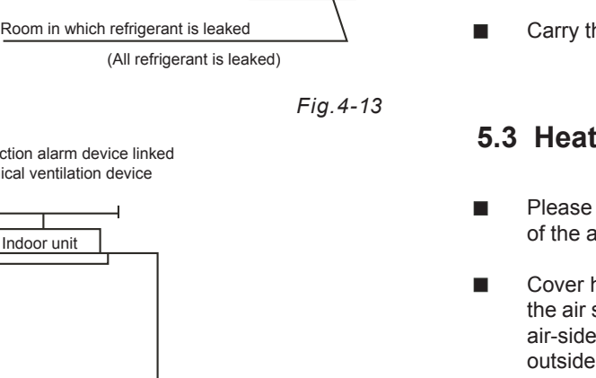

b. Leakage detection alarm device linked with the mechanical ventilation device
Indoor unit
OA
a. Ventilation orifice part
(The leakage detection alarm device should be installed at the place vulnerable to retention of the refrigerant)

Fig.4-14

4.14 Completing The Connection System Name

In case multiple systems are set, in order to identify the connection system of the indoor unit and outdoor unit, it is necessary to give name to each system, and mark it onto the nameplate on the electric control box cover of the outdoor unit.

NOTE

- ■ The indoor unit and outdoor unit are categorized into system A and system B. When installing and connecting the indoor unit and outdoor unit, identify the label carefully, and make sure that indoor unit corresponds to the outdoor unit exactly. Otherwise, it may lead to fault of the air conditioner.
- ■ Model of indoor unit.Room name
  Example: The first system indoor unit (A) of the 2nd floor is recorded as: 2F 1A

5. HEAT INSULATION OF THE PIPE

5.1 Heat Insulation Of The Pipe

In order to prevent faults caused by condensate of the refrigerant pipe and drain pipe, perform condensate prevention and heat insulation properly.

CAUTION

- ■ If it is forecast that high humidity/temperature environment (condensate temperature is over 23℃) may exist in the ceiling, e.g., inside the ceiling with slab, ceiling which is in the same environment as the outdoor air), it is necessary to apply 10mm or thicker adiabatic wool (16~20kg/m²) to the refrigerant pipe and the drain pipe in addition to applying the general heat insulation materials. Enough heat insulation materials should also be applied to the refrigerant joint and the pipe joint.

5.2 Heat Insulation Of The Drain Pipe

- ■ Be sure to entwine heat insulation materials round the drain pipe which runs through the room.
- ■ Carry through heat insulation for the drain pipes thoroughly.

5.3 Heat Insulation Of The Refrigerant Pipe

- ■ Please use heat-resistant materials as heat insulation materials of the air-side pipe. (e.g., EPT)
- ■ Cover heat insulation materials separately at the liquid side and the air side. Moreover, perform heat insulation thoroughly for the air-side pipes of the indoor unit, and prevent water from dripping outside the unit.

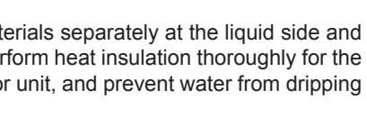


Fig.5-1

- ■ After applying the auxiliary heat insulation materials, use vinylresin tape to seal it lest water leak.

6. INSTALL THE CONNECTIVE PIPE

6.1 Preparation Before Installtion

- ■ Check the height difference between the indoor unit and the outdoor unit, and check the length and number of bends of the refrigerant pipeline, which must meet the following requirements:
  Max. height difference....20m (If the height difference is greater than 5m, it is best to put the outdoor unit above the indoor unit)
  Max. pipelinelength.........30m
  Max. number of bends....15
- ■ In the process of installing the connective pipe, do not letmmmm the air, dust or foreign substance intrude into the pipeline system.
- ■ Install the connective pipe only after fixing the indoor and outdoor units.
- ■ Keep dry when installing the connective pipe. Do not let moist intrude into the pipeline system.

6.2 Procedure Of Connecting Pipes:

- ■ Measure the required length of the connective pipe, and make the connective pipes in the following procedure.
- • Connect the indoor unit first, and then connect the outdoor unit. The pipe bend should be handled carefully, without damaging the pipe.

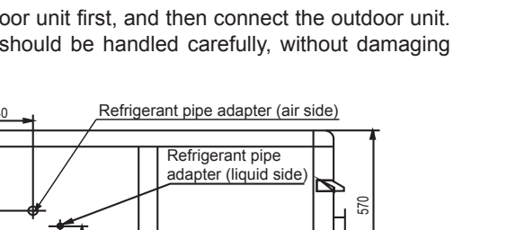

240
Refrigerant pipe adapter (air side)
Refrigerant pipe adapter (liquid side)
305
570
208
31
327
494
Drain pipe adapter
(Unit:mm)

Fig.6-1

CAUTION

- ■ Before screwing up the flared nut, apply refrigerant oil at the outer surface of the pipeline flare and the taper surface of the connection nut. Screw up the nut for 3~4 circles beforehand (see *Fig.6-2*).
- ■ When connecting or disconnecting the pipeline, be sure to use two spanners concurrently.
- ■ Do not rest the weight of the connective pipe on the adapter of the indoor unit. Too heavy load on the adapter of the indoor unit may deform the pipe and thus affect the cooling/heating effect.

- • The valve of the outdoor unit should be closed completely (as in the factory status). Every time when connecting the pipe, screw off the nut at the valve, and connect the flared pipe (within 5 minutes). If the nut is put away for a long time after being screwed off the valve, dust and other foreign substance may intrude into the pipeline system and lead to fault. Before connecting the pipe, use the refrigerant (R-22) to expel air out of the pipe.
- • After the refrigerant pipe is connected to the indoor and outdoor units, expel air as instructed in the "Expel air" section. After expelling the air, screw up the nut at the maintenance orifice.
- • Precautions for the flexible part of the pipeline

The bend angle shall not exceed 90°.

The bend shall be preferably in the middle of the pipe length, and higher bend radiuses are preferred.

Do not bend the flexible pipe for over 3 times.

- • Bend the thin-wall connective pipe

When bending the pipe, cut out a notch of the desired size at the bend of the adiabatic pipe, and then expose the pipe (wrap the pipe with the wrapping tape after bending it).

The radio of the elbow pipe should be as large as possible to prevent flattening or crush.

Use the pipe bender to make close elbow pipe.

- • Use purchased copper pipe
  When the cooper pipe is purchased from the market, be sure to use the heat insulation materials of the same type (with a thickness of over 9mm).

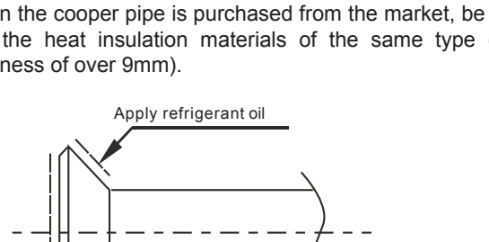


Fig.6-2

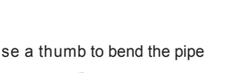

Use a thumb to bend the pipe
Min. radius 100mm

Fig.6-3

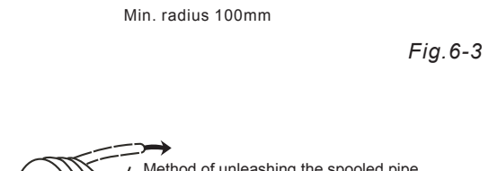


Fig.6-4

- ■ Deploy the pipelines
- • Drill a porthole on the wall, and put the hole sheath and hole cover through the wall.
- • Place the connective pipe together with the indoor & outdoor connection wires. Use wrapping tape to tie them tight. Do not let air penetrate into it lest condensation and drips of moist.
- • Pull the connective wrapped connective pipe from outdoor through the sheath which gets through the wall, and lead it into the room.Lay out the pipelines carefully lest damage to the pipes.
- ■ Make a vacuum of connective pipeline.

- ■ After the above steps are completed, the spool of the valve of the outdoor unit should be completely open, and the refrigerant pipeline of the indoor unit and the outdoor unit should be smooth.
- ■ Use a leak detector or soap water detect leak carefully to prevent leakage.
- ■ Put on an adiabatic envelope (accessory) at connective pipe adapter of the indoor unit, and wrap it tight with the wrapping tape lest condensate and leakage.
- • Flare

a. Use a pipe cutter to cut off the pipe.

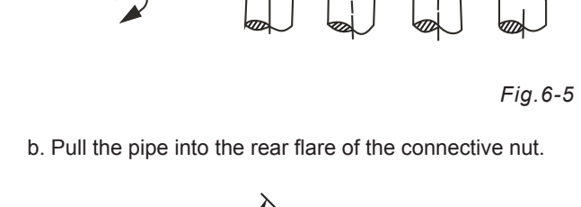


Fig.6-5

b. Pull the pipe into the rear flare of the connective nut.

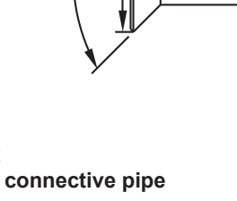


Fig.6-6

- • Tighten the nut
  Align with the connective pipe

  Screw up the connection pipe nut manually, and use a spanner to tighten it as shown in *Fig.6-7*

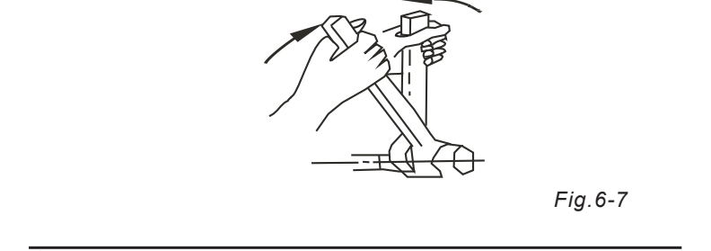


Fig.6-7

NOTE

- ■ According to the installation conditions, too large torque will damage the flaring, and too small torque will lead to looseness and leakage. Determine the tightening torque by reference to the following table.

- • Replenishment quantity of refrigerant required for air conditioner

The single-pass pipe is shorter than 5 m, and no additional length is required (note: The unit has been replenished before being shipped).

If the single-pass pipe length is 5 m or more, the quantity of fluorine required to be replenished is 0.065X(L-5). (Unit: kg) Record the replenishment quantity of the refrigerant and keep the record properly for reference in future maintenance.

Table.6-1

Pipe diameter	Torque
ϕ6.35	1420~1720N.cm (144~176kgf.cm)
ϕ9.52	3270~3990N.cm (333~407kgf.cm)
ϕ12.7	4950~6030N.cm (504~616kgf.cm)
ϕ16.0	6180~7540N.cm (630~770kgf.cm)
ϕ19.0	9720~11860N.cm (990~1210kgf.cm)

6.3 Expelling Air

- ■ From the following table, select a method of expelling air.

Table.6-2

Length of connective pipe (single pass)	Procedure of expelling air
Less than 5m	Use refrigerant in the outdoor unit
5~15m	Use vacuum pump or refrigerant tank.

- • If the air conditioner is relocated, be sure to use a vacuum pump or refrigerant tank to expel air.
- ■ Use the refrigerant in the outdoor unit to expel air(see *Fig.6-8* and *Fig.6-9*)
- • Screw up the pipe nuts at A, B, C and D completely.
- • Loosen and remove the square-head cover of valves A and B, rotate the square-head spool of valve B counterclockwise for 45 degrees and stay for about 10 seconds, and then close the spool of valve B tightly.
- • Detect leak for all adapters at A, B, C and D. After making sure that no leak exists, open the maintenance orifice nut of valve A. After all air is expelled, tighten the maintenance orifice nut of valve A.
- • Open the spools of valves A and B completely.
- • Tighten the square-head cover of valves A and B completely.

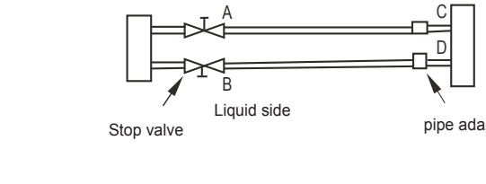


Fig.6-8

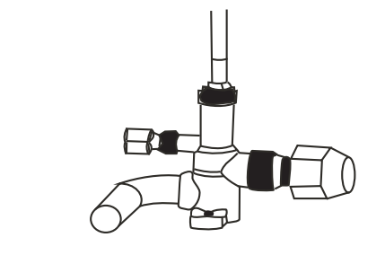


Fig.6-9

- ■ Use refrigerant tank to expel air (see *Fig.6-8* and *Fig.6-9*)
- • Screw up the pipe nuts at A, B, C and D completely.
- • Loosen and remove the square-head cover and the maintenance orifice nut of valves A and B.
- • Connect the filler hose of the refrigerant tank with the maintenance orifice of valve A.
- • Loosen the valve of the refrigerant tank, continue filling refrigerant for 6 seconds to expel the air, and tighten the nut of valve B quickly.
- • Loosen the valve of the refrigerant tank again, and fill the refrigerant for 6 seconds. Detect leak for all adapters at A, B, C and D. After making sure that no leak exists, screw off the filler hose. After all the filled refrigerant is expelled, screw up the maintenance orifice nut of valve A quickly.
- • Open the square-head spools of valves A and B completely.
- • Tighten the square-head cover of valves A and B.
- ■ Use a vacuum pump to expel the air (*Fig.6-10*): (For method of using the manifold valve, see the operation manual of manifold valve)
- • Loosen and remove the maintenance orifice nut of valve A, and connect the filler hose of the manifold valve to the maintenance orifice of valve A (tighten both valve A and valve B).
- • Connect the filler hose adapter to the vacuum pump.
- • Open the low pressure (Lo) handle of the manifold valve completely.
- • Start the vacuum pump to extract air. At the beginning of extracting air, slightly loosen the maintenance orifice nut of valve B, check whether any air enters it (the vacuum pump noise changes, and the multimeter indicates from negative to 0). Then tighten this maintenance orifice nut.
- • Upon completion of vacuuming, tighten the low pressure (Lo) handle of the manifold valve completely and stop the vacuum pump. Keep extracting air for over 15 minutes. Check whether the multimeter points at -1.0X10 Pa(-76cmHg).
- • Loosen and remove the square-head cover of valves A and B. After opening valves A and B completely, tighten the square-head cover of valves A and B.
- • Remove the filler hose off the maintenance orifice of valve A, and then tighten the nut.

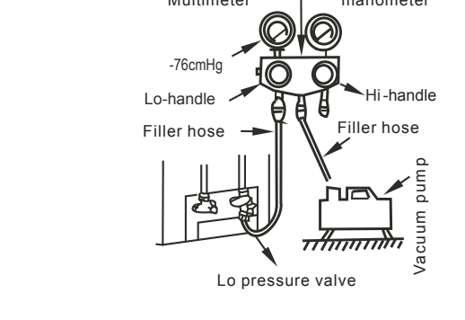


Fig.6-10

- ■ Procedure of using stop valve
- • Open the spool until it touches the stop block. Do not attempt to open further.
- • Use a spanner or a similar tool to tighten the bonnet. The bonnet tightening torque is shown in aboveTable "Tightening torque".
- • Upon completion of installation, open all valves before trial run. Each unit has two valves of different sizes located at the outdoor unit side. Of the two valves, one is gas valve and the other is liquid valve. The procedure of opening/closing the valve is shown in the right figure (*Fig.6-11*).
- • Procedure of opening the valve: Open the square-head cover, use a spanner to capture the square head and open it thoroughly. Then tighten the square-head cover.
- • Procedure of closing the valve: Same as the procedure of opening the valve, but rotate the spanner clockwise thoroughly.

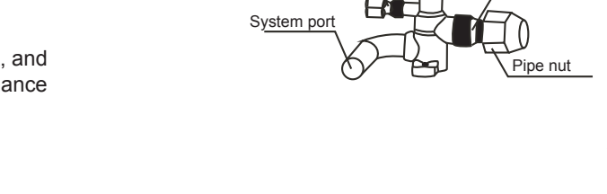


Fig.6-11

6.4 Leak Detection

- ■ Use soap water or a leak detector to check whether gas leakage exists at the adapters.

6.5 Heat Insulation

- ■ Use heat insulation materials to wrap the part protruding outside the flared pipe joint and the refrigerant pipe of the liquid pipe and the gas pipe, and ensure that no gap exists between them.
- ■ Imperfect heat insulation may lead to condensate drips.

7. INSTALL THE DRAIN PIPE

- ■ Install the drain pipe of the indoor unit

In order to prevent drain overflow, install a drainage controller at place 1 of the drain pipe. (The drainage controller is designed to smoothen the drainage when the static pressure outside the unit is high, especially at the air inlet, in addition to remove stink through the drain pipe.)

The drain of water is natural. In the construction, the external pipe of the outdoor unit slants downward at a gradient of 1/50~1/100.

The number of bends and folds of the drain pipe should not exceed 2. Try to avoid bends in order to prevent trash accumulation.
In the construction, do not drop trash into the drip tray or drain pipe of the indoor unit.

Upon completion of installing the drain pipe, remove the inspection panel. Put water into the drip tray to check whether the water can be drained levelly and steadily.

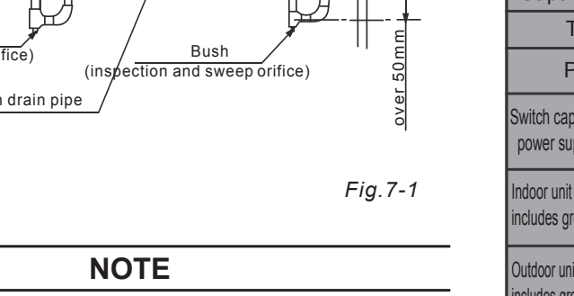


Fig.7-1

NOTE

- ■ Drain pipe trash gains easily at the drainage controller. Be sure to install a stopper and a structure that cleans up trash easily.

- ■ Trial draining of the drain pipe
  Open the side panel of the indoor unit, fill water inward, and check whether the water can be drained smoothly. Check water leak at the joint.
- ■ Heat insulation of drain pipe
  After making sure that the water drains smoothly and no water is leaked, use adiabatic wool bushes to preserve heat of the drain pipe. Otherwise, condensate will occur.

8. ELECTRIC CONNECTION

- ■ Electric wiring

CAUTION

- ■ Use special power supply for the air conditioner. Design power supplies specific to the indoor unit and outdoor unit. The supply voltage must comply with the nominal voltage.
- ■ The external supply circuit of the air conditioner must have a ground wire, and the power supply ground wire of the indoor unit must be connected with the external ground wire firmly.
- ■ The wiring must be performed by professional technicians according to the circuit diagram labels.
- ■ Distribute the wires according to the relevant electric technical standards promulgated by the State, and set the Residual Current-operated Circuit Breaker (RCCB) properly.
- ■ The power wire and the signal wire shall be laid out neatly and properly, without mutual interference or contacting the connection pipe or valve.
- ■ No power cable is attached to this equipment. The user can select the power cable by reference to the stipulated power supply specifications. No joint of wires is allowed.
- ■ Upon completion of wire connection, double check it and then connect the power supply.

- ■ Specifications of power supply

Table.8-1

	Indoor unit		Outdoor unit
Capacity(Btu/h)	BSAH-76/96HR		UCV-76/96HT
Type	Mid. static pressure	Hi. static pressure	———
Power	220V-240V ~ 50Hz	220V-240V ~ 50Hz	380V~415V 3N ~ 50Hz
Switch capacity of the main power supply/fuse(A)	20/8	20/12	60/40
Indoor unit power cable(mm²) includes grounded wire	RVV-300/500 3×2.5 mm	RVV-300/500 3×2.5 mm	———
Outdoor unit power cable(mm²) includes grounded wire	———		YCW-450/750 5×6.0 mm
connective wire of indoor outside unit	RVV-300/500 4×1 mm²		
Wire controls connective wire	RVVP-300/300 5×0.5 mm²		

- ■ Power wires

The power wires are as follows: (schematic diagram)

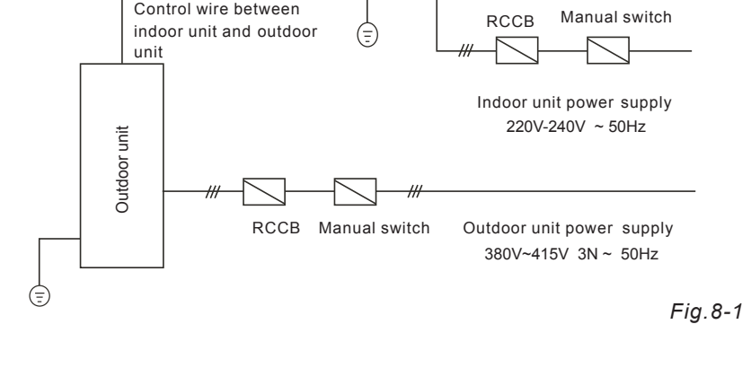

Indoor unit
Control wire between indoor unit and outdoor unit
RCCB
Manual switch
Indoor unit power supply 220V-240V ~ 50Hz
Outdoor unit
RCCB
Manual switch
Outdoor unit power supply 380V~415V 3N ~ 50Hz

Fig.8-1

9. ELECTRIC WIRE DIAGRAM

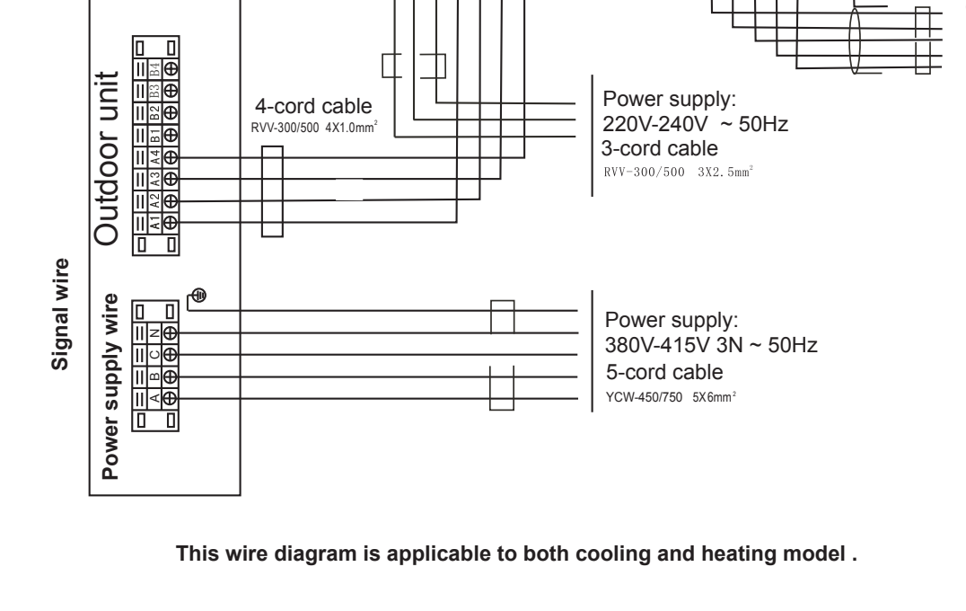


Fig.9-1

This wire diagram is applicable to both cooling and heating model .

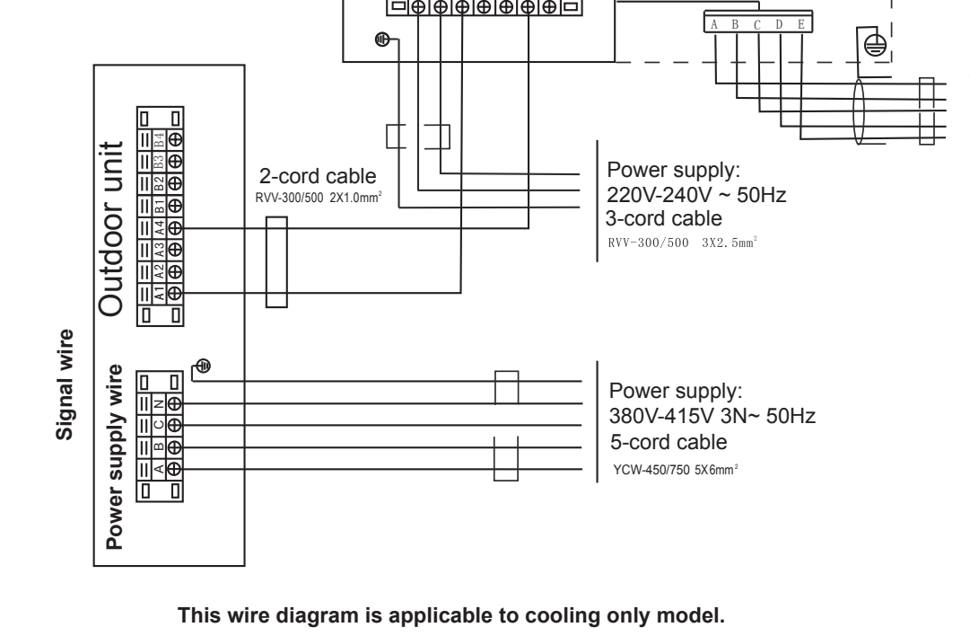


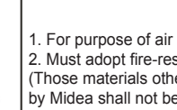
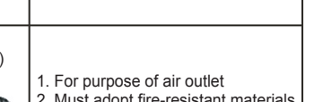
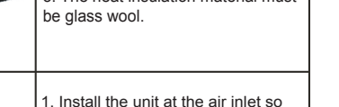
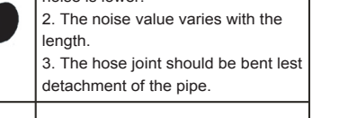
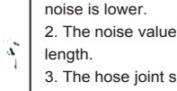
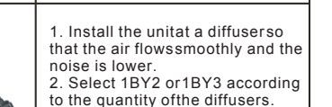
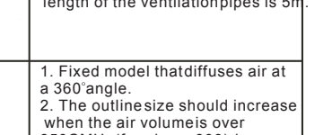
Fig.9-2

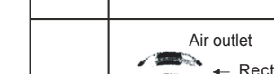
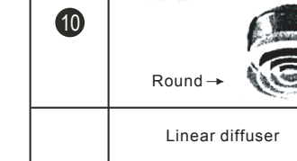
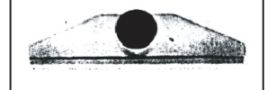
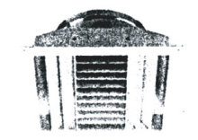
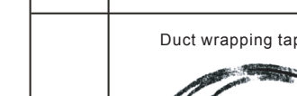
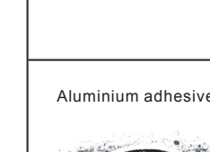
This wire diagram is applicable to cooling only model.

NOTE

- ■ Pay attention to the phase sequence of the power supply. If the phase sequence is reversed, the compressor will not start. Meanwhile, the fault indicator of the outdoor electric control board will light up. For details, see Outdoor unit wring diagram on the cover plate of the electric control box .
- ■ After shifting the phase sequence, power on the unit until the fault indicator goes out and the compressor starts up normally.

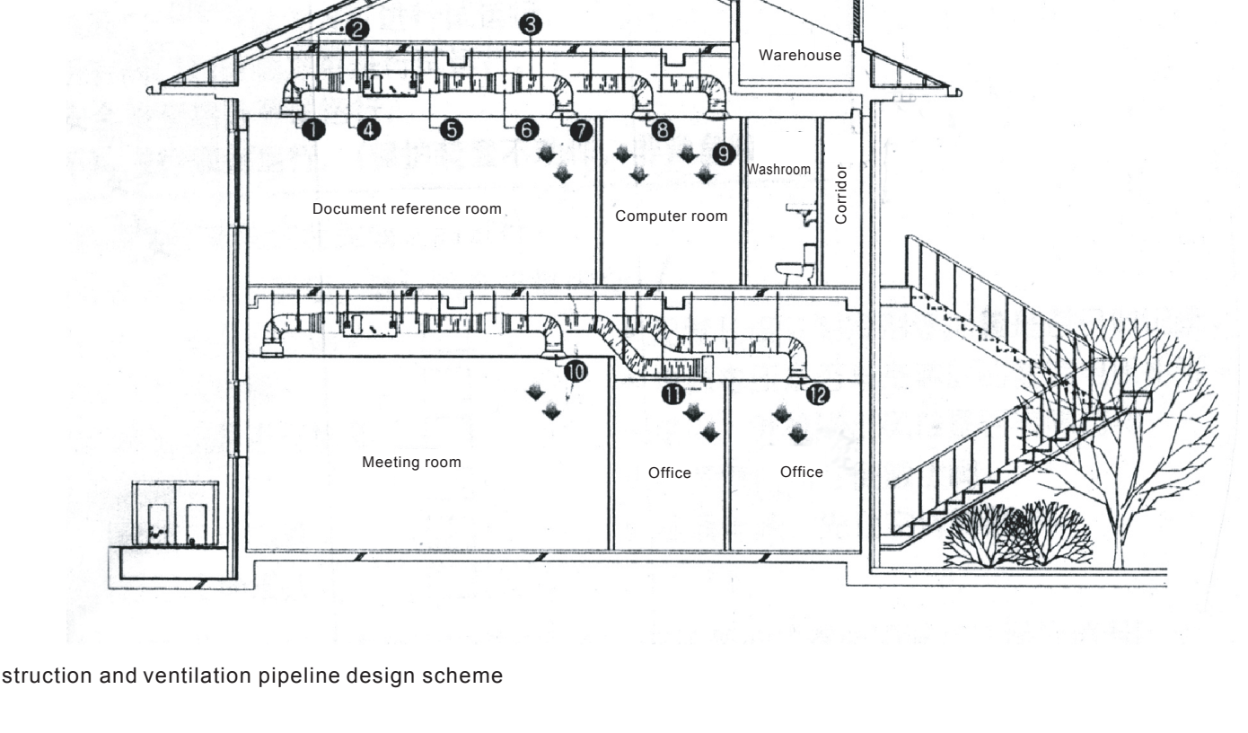
10. METHODS OF CONFIGURING AND SELECTING INSTALLATION

Material name		Characteristics,advantages and other contents
❶	Air inlet wooden grille  Filter	1. Install the fillter at the main body grille in case the storey height is low, and at the main body of the indoor unit in case the storey height is high. 2. It cleans conveniently at the time of installing/uninstalling the fillter. 3. The button structure is easy to install and uninstall.
❷	Hose(for absorbing noise) 	1. For purpose of air inlet 2. Must adopt fire-resistant materials.(Those materials other than specified by Midea shall not be applied) 3. The heat insulation material must be glass wool.
❸	Hose(for general purpose) 	1. For purpose of air outlet 2. Must adopt fire-resistant materials.(Those materials other than specified by Midea shall not be applied) 3. The heat insulation material must be glass wool.
❹	Air inlet noise pipe 	1. Install the unit at the air inlet so that the air flows smoothly and the noise is lower. 2. The noise value varies with the length. 3. The hose joint should be bent lest detachment of the pipe.
❺	Air outlet noise pipe 	1. Install the unit at the air outlet so that the air flows smoothly and the noise is lower. 2. The noise value varies with the length. 3. The hose joint should be bent lest detachment of the pipe.
❻	Distributor 	1. Install the unitat a diffuserso that the air flowssmoothly and the noise is lower. 2. Select 1BY2 or1BY3 according to the quantity ofthe diffusers. 3. The diffuserpipes should preferably have the samelength after branching, and theminimum length of the ventilationpipes is 5m.
❼	Rectangular air outlet 	1. Fixed model thatdiffuses air at a 360°angle. 2. The outlinesize should increase when the air volumeis over 350CMH. (for above 303),i.e., when about 9 diffusers are required, the outline sizeshould increase. 3. The diffuserpipes should preferably have the samelength after branching, and theminimum length of the ventilationpipes is 5m.

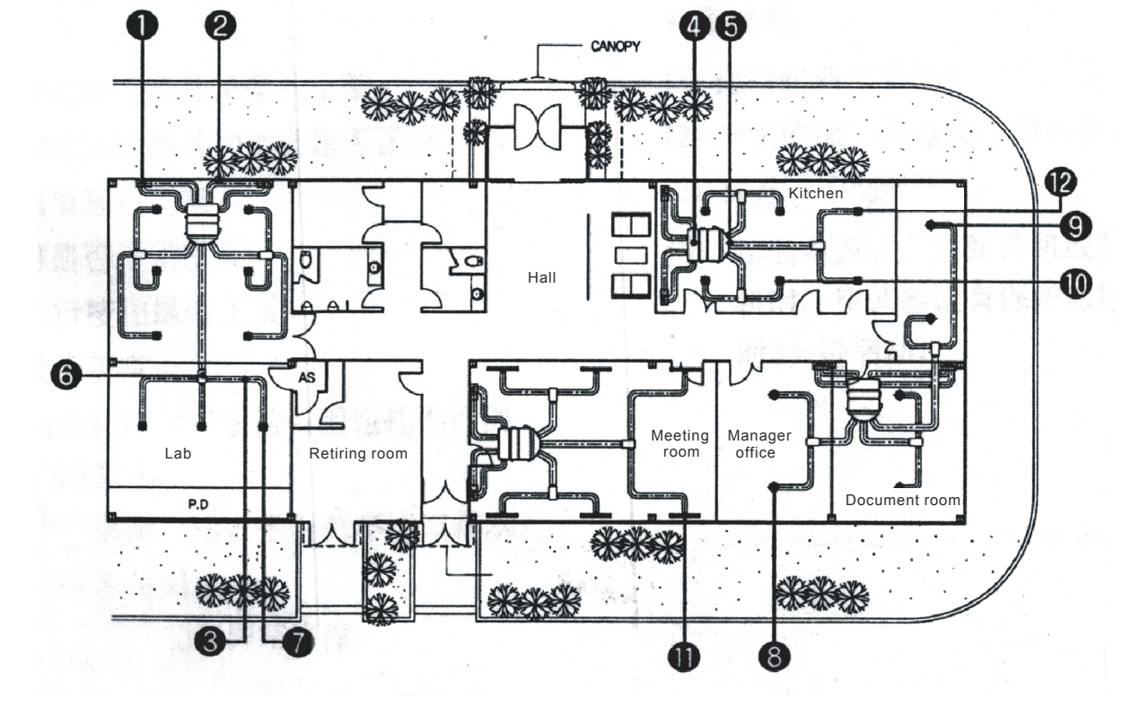
Material name		Characteristics,advantages and other contents
❽	Air outlet 	1. Fixed model that diffuses air at a 360°angle. 2. The outline size should increase when the air volume is over 350CMH. (for above 303), i.e., When about 9 diffusers are required, the outline size should increase. 3. Proper air speed: For air speed of over 2-3.5m/s, select other diffusers (with greater noise). 4. Install the diffuser pipe if it is necessary to install the model of over 3.5m/s. 5. For purpose of cooling-only model
❾	Air outlet 	1 The lengthwiseadjustable model which diffuses airat a 360°angle. 2. With the changeof the cooling/heating air flow,the horizontal and vertical distance of thefan can be adjusted (applicable to department store and exhibition hallwhere the decorative effect isessential).
❿	Air outlet  ← Rectangular Round →	1. Low noise comparedwith other air outlets. Applicableto tall buildings that require along distance of air conditioning. 2. Select the ventilationpipe connection calibre according tothe distance and the airspeed. 3. Applicable tostorey height of over 5m (for design oftall storeys such as temple, consult Midea).
⓫	Linear diffuser 	1. The fan is the adjustable type which can change direction of air flow. It isused for deluxe decoration. 2. The outline size should increase when the air volume is over 450CMH. (3 or 4SOLT) When about 6 diffusers are required, the outline size should increase. 3. If the proper air speed is 2.5 5m/s and actual air speed reaches over 5m/s, it is necessary to choose other diffusers (with higher noise values).
⓬	Air outlet wooden grille 	1. Low noise comparedwith other air outlets. Applicableto tall buildings that require along distance of air conditioning. 2. Select the ventilationpipe connection calibre according tothe distance and the airspeed. 3. Applicable tostorey height of over 5m (for design oftall storeys such as temple, consult Midea).
Auxiliary materials	Duct wrapping tape 	1. Flanges and pipelinesconnected to the ventilation pipes. 2. When the noisepipe is connected with the hose, theventilation pipe tape must be applied(otherwise, with only adhesive tape,the adhesion will be weakeneddue to change of temperature).
	Aluminium adhesive tape 	1. It is used to prevent glass wool leak and seal the gas at the time of connecting the flanges and pipelines of the ventilation pipes. 2. Entwine for over 3 circles. 3. Use ventilation pipe-specific tapes (instead of ordinary adhesive tapes). In order to ensure the installation quality and durability, it is necessary to use auxiliary materials of standard specifications provided by Midea Electronics and the auxiliary products of the specified manufacturers.

11. CONSTRUCTION AND VENTILATION PIPELINE DESIGN SCHEME

- ■ Examples of construction and ventilation pipeline design scheme(Flowering hidden series)



- ■ Construction and ventilation pipeline design scheme



12. TRIAL RUN

Please conduct in accordance with "Trial Run Tenor Nameplate" on the electric control box.

CAUTION

- ■ Perform the trial run only after the outdoor unit has been powered on for over 12 hours.
- ■ Check that all valves are opened before trial run.
- ■ Check the electric safety before trial run.
- ■ Do not perform compulsory operation in any way.(It is very dangerous if the protection device is not active)

- ■ Perform trial run only after all installations are finished.
- ■ Confirm the following issues before trial operation, and √ the box for the confirmed items.
- • Check whether the indoor unit and the outdoor are installed properly. ☐
- • Check whether the piping and wiring are correct. ☐
- • Check whether the refrigerant pipeline system is inspected for leakage. ☐
- • Check whether the drain is smooth. ☐
- • Check whether the heat insulation is perfect. ☐
- • Check whether the ground cables are connected correctly. ☐
- • Check whether the pipe length and the refrigerant amount are recorded. ☐
- • Check whether the supply voltage is equal to the rated voltage of the air conditioner. ☐
- • Check whether any obstacles exist at the air inlet/outlet of the indoor or outdoor unit. ☐
- • Open the gas valve and the liquid valve. ☐
- • Connect the power supply to preheat the air ☐

- ■ Install the remote controller holder as required by the user. The holder must be installed in a location suitable for transmitting the signals of the remote controller to the indoor unit.
- ■ Trial run
  Use the remote controller or wire controller (matched) to let the air conditioner run in the cooling mode. Inspect the following items against the operation manual. (If any fault occurs, remove the fault by reference to the Section headed "Faults of Air Conditioner and Causes" in the Operation Manual.)
- ■ Indoor unit
- • Check whether the switch of the remote controller or wire controller is normal.
- • Check whether the functional keys of the remote controller or wire controller are normal.
- • Check whether the indoor temperature conditioning is normal.
- • Check whether the indicators illuminate normally.
- • Check whether the manual operation buttons are normal.
- • Check whether the drain function is normal.
- • Check whether the connective copper pipes and the drain pipes generate condensate due to loose wrapping.
- • Open the air inlet grille to check whether any penetration or leak of water occurs, especially at the drain stopper.
- • Check whether any vibration or abnormal sound occurs during the operation.
- • Test whether the unit works normally in the heatig mode.
- ■ Outdoor unit
- • Check whether any vibration or abnormal sound occurs during the operation.
- • Check whether the air, noise and condensate generated by the unit affect the neighbors.
- • Check whether any refrigerant is leaked.

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